MULTIMEDIA UNIVERSITY ®

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2022 / 2023

BBA3034 – BUSINESS ANALYTICS

(All sections / Group)

4 JULY 2023
9 a.m. – 11 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of 2 pages (excluding cover page) with 4 Questions only.

2. Attempt **ALL** questions. The distribution of the marks for each question is given.

3. Write your answers in the Answer Booklet.

QUESTION 1 [20 Marks]

You have applied for a job in a company that provides online shopping services and have been shortlisted for an interview. The recruiting officer has informed you that there will be questions on your knowledge of Business Analytics and these are some questions that you may be asked. How would you answer the questions at the interview?

a. What is Business Analytics and why is it becoming increasingly important in the business world? (4 marks)

b. Describe two differences between Classification and Clustering (2 marks)

c. Describe 3 business problems that can be addressed with Classification techniques and 1 business problem that can be addressed with Clustering techniques. (4 marks)

d. Describe the 6 steps for implementing a machine learning model? (6 marks)

e. Describe 2 challenges in implementing machine learning models and suggest how these challenges can be overcome. (4 marks)

QUESTION 2 [10 Marks]

Gruber is a company that provides on-line delivery services. It receives hundreds of emails, SMS and whatsapp messages from their customers every day. It is looking for a machine learning model to categorise the messages automatically into subjects such as "Delays", "Price", "Compliment", "Driver attitude", "Food Quality" so that the messages can be forwarded to the appropriate staff for action.

a. Which machine learning model would you recommend to Gruber and why ? (2 marks)

b. Define the data that will be required for the model:
   - What will be the columns or features of the data? (2 marks)
   - What will be the rows of the data? (2 marks)

c. Describe one strength and one weakness of your recommended solution (2 marks)

d. How will you determine the effectiveness of the model? (2 marks)

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QUESTION 3 [10 marks]

A supermarket manager has decided that he needs to re-arrange the placement of products on the shelves, so that products that are often bought together are placed close to each other. Describe how the manager could use the relevant machine learning technique to identify products that have strong association rules :

a. What are the main steps in the process ? (6 marks)

b. What data is required ? (2 mark)

c. What are key parameters that need to be defined so that focus is given only to products that are selling well ? (2 marks)

QUESTION 4 [10 Marks]

A supermarket observed the following behaviour amongst its 1000 customers :

- 100 customers buy milk regularly
- 80 customers buy butter regularly
- 60 customers buy milk and butter regularly
- 90 customer also buy bread regularly
- 50 customers buy milk and bread regularly

The supermarket has been approached by two vendors : Vendor ButterBaru wants to promote a new brand of butter whereas vendor RotiBaru wants to promote a new brand of bread. They know that milk is a bestseller in the supermarket and would like to place their products next to the milk section.

There is space for only one product. You have to choose the product that milk customers are more likely to buy by answering the following questions :

a. What is the probability that customers will buy milk ie what is the support for milk? (1 mark)

b. What is the support for butter ? (1 mark)

c. What is the support for bread ? (1 mark)

d. What is the probability that customers who buy milk will also buy butter ie the confidence of (milk->butter) ? (1 mark)

e. What is the confidence of (milk->bread) ? (1 mark)

f. If a customer buys milk, how more likely are they to buy butter ? Calculate the lift(milk > butter) (2marks)

g. Calculate the lift (milk->bread). (2marks)

h. Should the space next to the milk section be allocated to the RotiBaru vendor or the ButterBaru vendor ? Why ? (1 mark)

End of paper